CHROMOSOME NUMBERS AND TAXONOMIC NOTES ON NORTHERN GRASSES

IV. TRIBE FESTUCEAE: POA AND PUCCINELLIA[1]

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Abstract

Chromosome numbers and voucher specimens are recorded for some Canadian and Alaskan collections and a few mainland American collections of *Poa* and *Puccinellia* which belong to the tribe FESTUCEAE. The somatic chromosome numbers of the following are recorded: (1) *Poa agassizensis*, $2n$ = ca. 56; *P. alpina*, $2n$ = 32, 33, 39, and 42; *P. ampla*, $2n$ = 62; *P. annua*, $2n$ = 28; *P. arctica*, $2n$ = 56, 63, 70, ca. 75, 78, 82, 85, 86, and 106; *P. arida*, $2n$ = ca. 76; *P. canbyi*, $2n$ = 56, 70, and ca. 98; *P. cusickii*, $2n$ = 56, and 59; *P. eminens*, $2n$ = 42; *P. fernaldiana*, $2n$ = ca. 42; *P. glauca*, $2n$ = 42, 50, 56, 64, 65, 70, 75, and 78; *P. glaucantha*, $2n$ = 44; *P. glaucifolia*, $2n$ = 56, ca. 70, and ca. 100; *P. interior*, $2n$ = 28, 34, 42, and 56; *P. juncifolia*, $2n$ = ca. 60; *P. leptocoma*, $2n$ = 42; *P. nervosa*, $2n$ = 56, and ca. 74; *P. palustris*, $2n$ = 28, 30, and 32; *P. pratensis*, $2n$ = 28, 42, 44, 56, ca. 66, 67, 70, 74, ca. 78, ca. 82, 84, 86, 88, and ca. 124; *P. saltuensis*, $2n$ = 28; *P. secunda*, $2n$ = 42, 56, 70, ca. 78, 80, and ca. 90; *P. stenantha*, $2n$ = 42; and *P. trivialis*, $2n$ = 14.

(2) *Puccinellia ambigua*, $2n$ = 56; *P. americana*, $2n$ = ca. 42 and 56; *P. angustata*, $2n$ = 42; *P. borealis*, $2n$ = 42; *P. bruggemannii*, $2n$ = 28; *P. cusickii*, $2n$ = 28; *P. distans*, $2n$ = 42; *P. glabra*, $2n$ = 42 and 56; *P. hauptiana*, $2n$ = 28; *P. laurentiana*, $2n$ = 42 and 56; *P. longiglumis*, $2n$ = 56; *P. lucida*, $2n$ = 42 and 56; *P. nuttalliana*, $2n$ = 42; *P.* × *pkryganodes*, $2n$ = 21; *P. vaginata*, $2n$ = 56; and *P. vahliana*, $2n$ = 14.

Introduction

Bowden (1959, 1960*a*, 1960*b*) reported the chromosome numbers of numerous collections of grasses, mostly from Canada. Bowden (1960*a*) treated collections of the tribe FESTUCEAE and noted that the numerous collections of *Poa* and *Puccinellia* would be considered in a later paper in the series. The present paper, the concluding one of this series, is a report on some Canadian and Alaskan collections and a few mainland American collections of *Poa* and *Puccinellia*. Bowden (1959) described the materials and methods that have been used during these investigations.

Results

The species in each genus are arranged alphabetically so that the data can be easily consulted. For each voucher specimen, data are given on the province, district, or state, the cytogenetic accession number (= Cyt. No.), the geographical locality where the material was originally collected, the collector's name and specimen number, and the somatic ($2n$) chromosome number. In the citation of chromosome numbers, the specimens sent in from the field as live plants are designated as "clones" and the plants grown to

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maturity from seed are designated as "plants". All of the voucher specimens are deposited in the Phanerogamic Herbarium of the Plant Research Institute (DAO).

The identification of specimens of *Poa* and *Puccinellia* is a difficult task even for a specialist. Most of the specimens were sent to J. R. Swallen (Smithsonian Institution, Washington) and he gave definite identifications of some specimens and provisional identifications of others. W. G. Dore (Plant Research Institute, Ottawa) identified some of the specimens, and Th. Sørensen (Copenhagen, Denmark) identified a few of the specimens of *Puccinellia*. It is quite likely that some revisions of the identifications of some of these specimens will need to be made in the future when new monographs are available. For the genus *Poa*, I have checked the final identifications with the key and text for *Poa* in Chase's revision of Hitchcock's manual (1951) with the exception of *Poa agassizensis* and *Poa eminens*. *Poa agassizensis* was recently described by Boivin and Löve (1960) and *Poa eminens* was listed in Fernald's revision of Gray's manual (1950) and in Hultén (1942). There is no single key for all of the species of *Puccinellia* and I have used Chase's revision of Hitchcock's manual (1951), volumes 2 and 10 of Hultén (1942, 1950), Sørensen in Porsild (1955), and the monographs by Fernald and Weatherby (1916), Swallen (1944), and Sørensen (1953).

In *Puccinellia*, most of the species have distinctive chromosome numbers but four species have both hexaploids and octoploids. These latter mixtures of polyploids may prove to be due to misidentifications or there may be several infraspecific taxa in each of these four species. In *Poa*, it has been known for many years that there are a series of polyploids in some species. The present list shows only a few species of *Poa* that have a rather uniform chromosome number within each species, for example, *Poa annua* and *Poa palustris*. In several species, a range of polyploid numbers is reported, for example, *Poa arctica*, *P. glauca*, *P. interior*, *P. pratensis*, and *P. secunda*. A new monograph of the North American species of *Poa* is much needed. When such a monograph is available, it is possible that there would be a better correlation between chromosome number and specific identification. The great range of chromosome number in some species may actually indicate the presence of different infraspecific taxa, either subspecies or varieties, or apomicts, and there may be some inter- and intra-specific hybrids. The main value of the present material of *Poa* and *Puccinellia* is that the specimens used for cytological study have been preserved and are available for future monographic work.

While there is a wide range of chromosome numbers in some species of *Poa*, as presently interpreted, the value of the voucher specimens is that the morphological differences between different polyploids in a complex, whether large or small, can be analyzed and taken into account by the taxonomist. In some instances in a polyploid complex, there is a correlation between chromosome number and geographical distribution, for example, the four different octoploid collections of *Poa arctica* from Baffin Island or the four different decaploid collections of *Poa arctica* from the District of Keewatin.

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Collections of *Poa*

(1a) Poa agassizensis Boivin & D. Löve

One collection (paratype) of this species had $2n$ = ca. 56. Boivin and Löve (1960) listed this collection. Other collections reported by them had $2n$ = 41, 42, and 43.

Voucher specimen of paratype: Manitoba: Cyt. No. 1226, 1 mile south of Morden, *W. G. Dore 11435*; $2n$ = ca. 56 det. on one plant.

(1b) Poa alpina L.

Four collections showed the numbers, $2n$ = 32, 33, 39, and 42.

Voucher specimens: Manitoba: Cyt. No. 571, Fort Churchill, *J. M. Gillett s.n., July, 1948*; $2n$ = 32 det. on one clone. Cyt. No. 717, Knife Lake, *J. M. Gillett 2271*; $2n$ = 33 det. on one plant. Alberta: Cyt. No. 1213, 5 miles SW. of Twin Butte, north of Waterton Lakes Park, *W. G. Dore s.n., August 1, 1950*; $2n$ = 39 det. on one plant. Alaska: Cyt. No. 1386, Falls Creek, Mile 229, Richardson Highway, *W. J. Cody 6307*; $2n$ = 42 det. on one plant.

Skalińska (1952) reported a range of somatic chromosome numbers for *P. alpina*, namely $2n$ = 14 to $2n$ = 35. Of 113 plants examined, 24 clones had $2n$ = 33 while the numbers $2n$ = 32, 39, and 42 were not encountered. Löve and Löve (1956) reported $2n$ = 22 to $2n$ = 47 for *P. alpina* from Iceland and listed $2n$ = 14 to $2n$ = 74 for previous literature reports for this species. Löve and Löve (1956) studied 178 Icelandic specimens and found $2n$ = 33 in 112 specimens and $2n$ = 44 in 41 specimens. They found one plant with $2n$ = 39.

(1c) Poa ampla Merr.

One collection had $2n$ = 62.

Voucher specimen: Alberta: Cyt. No. 1209, 6 miles north of Waterton Lakes Park, *W. G. Dore s.n., July 28, 1950*; $2n$ = 62 det. on one plant.

Hartung (1946) reported $2n$ = 62 to $2n$ = ca. 100 for collections of *P. ampla*; and Grun (1955) listed $2n$ = 64 and $2n$ = 96. More than half of Hartung's collections had $2n$ = 63.

(1d) Poa annua L.

Three collections were tetraploid, $2n$ = 28.

Voucher specimens: Newfoundland: Cyt. No. 789, near Stephenville, *I. J. Bassett s.n., June, 1949*; $2n$ = 28 det. on one clone. Labrador: Cyt. No. 1059, Goose Bay, *J. M. Gillett s.n., July, 1950*; $2n$ = 28 det. on one clone. Alaska: Cyt. No. 1365, Seward, Kenai Peninsula, *J. A. Calder 5749*; $2n$ = 28 det. on one plant.

Löve and Löve (1956) listed $2n$ = 28 for Icelandic collections of *P. annua* and listed numerous literature reports of the same count. Hovin (1958) reported $2n$ = 14 in four aberrant clones identified as "amphihaploid *Poa annua*".

(1e) Poa arctica R. Br.

Numerous collections of *P. arctica* were studied and a series of polyploid chromosome numbers were observed. Four accessions were octoploid, $2n$ = 56; four collections were decaploid, $2n$ = 70; two collections had $2n$ = 78; and one collection each had $2n$ = 63, ca. 75, 82, 85, 86, and 106.

Voucher specimens: Franklin District: Cyt. No. 576 and 583, Baffin Island,

Frobisher Bay, *H. A. Senn s.n., July, 1948*; $2n=56$ det. on two clones. Cyt. No. 613 and 718, Baffin Island, Frobisher Bay, *J. A. Calder s.n., August, 1948, and J. A. Calder 2213*; $2n=56$ det. on one clone and one plant. Keewatin District: Cyt. No. 683 and 728, Southampton Island, Coral Harbor, *W. J. Cody 2015 and W. J. Cody 1966*; $2n=70$ det. on two plants. Cyt. No. 1105 and 1106, Chesterfield Inlet, ½ mile SE. of settlement, *D.B.O. Savile & C.T. Watts 1564 and 1565*; $2n=70$ det. on two plants. Cyt. No. 723, Southampton Island, Coral Harbor, *W. J. Cody 1906*; $2n=78$ det. on one plant. Alaska: Cyt. No. 1362, head of Resurrection Bay, Seward, Kenai Peninsula, *J. A. Calder 5734*; $2n=$ca. 78 det. on one plant. Franklin District: Cyt. No. 603, Baffin Island, Frobisher Bay, *J. A. Calder s.n., August, 1948*; $2n=63$ det. on one clone. Alaska: Cyt. No. 1361, about 3 miles north of Seward–Hope–Kenai Road Junction, Kenai Peninsula, *J. A. Calder 5767*; $2n=$ca. 75 det. on one plant. Keewatin District: Cyt. No. 725, Southampton Island, Coral Harbor, Hudson Bay Post, *W. J. Cody 1926*; $2n=82$ det. on one plant. Quebec: Cyt. No. 953, near Hudson Bay Post, Great Whale River, *D.B.O. Savile 642*; $2n=85$ det. on one plant. Keewatin District: Cyt. No. 682, Southampton Island, Coral Harbor, *W. J. Cody 2013*; $2n=86$ det. on one plant. Franklin District: Cyt. No. 596, Baffin Island, Frobisher Bay, *J. A. Calder s.n., August, 1948*; $2n=106$ det. on one clone.

Löve and Löve (1948) summarized the literature reports for *P. arctica* and listed a wide range of somatic chromosome numbers, $2n=38$ to $2n=$ca. 100.

(1f) Poa arida Vasey

One collection had $2n=$ca. 76.

Voucher specimen: Alberta: Cyt. No. 1222, 15 miles N. of Wild Horse, southeast corner of Alberta, *W. G. Dore 11998*; $2n=$ca. 76 det. on one plant.

Hartung (1946) listed $2n=63$, 64, 84, ca. 90 and ca. 103 for this species.

(1g) Poa canbyi (Scribn.) Piper

One collection had $2n=56$; three were $2n=70$; and one accession had $2n=$ca. 98.

Voucher specimens: Alberta: Cyt. No. 1197, 15 miles N. of Wild Horse, SE. corner of Alberta, *W. G. Dore 11999*; $2n=56$ det. on one plant. Cyt. No. 1198, 15 miles N. of Wild Horse, southeast corner of Alberta, *W. G. Dore 12000*; $2n=70$ det. on one plant. Cyt. No. 1204, 15 miles north of Cardston, *W. G. Dore & A. J. Breitung 12259*; $2n=70$ det. on one plant. Cyt. No. 1206, 10 miles south of Cardston, *W. G. Dore 12340*; $2n=70$ det. on one plant. Cyt. No. 1220, Manyberries, *W. G. Dore 12023*; $2n=$ca. 98 det. on one plant.

Hartung (1946) reported $2n=$ca. 72, ca. 82, ca. 83, 84, 85, 93, ca. 94, ca. 90, ca. 99, and 105–106 for collections of *P. canbyi*.

(1h) Poa cusickii Vasey

Two collections had the chromosome numbers, $2n=56$ and 59.

Voucher specimens: Alberta: Cyt. No. 1182; northern edge of Milk River Ridge, 40 miles south of Lethbridge, *W. G. Dore 11760*; $2n=56$ det. on one plant. Cyt. No. 1178, Rocky Mt. Foothills, 7 miles south of Cardston, *W. G. Dore 12195*; $2n=59$ det. on one plant.

Hartung (1946) reported $2n=42$ for one collection of *P. cusickii*. Stebbins and Love (1941) reported $2n=28$ for two collections.

(1i) Poa eminens Presl

Two collections were hexaploid, $2n=42$.

Voucher specimens: Newfoundland: Cyt. No. 1411, head of Harbour, St. Anthony, *D.B.O. Savile & J. Vaillancourt 2889*; $2n=42$ det. on one plant. Labrador: Cyt. No. 1126, Goose Bay, Terrington Basin, *J. M. Gillett & W. I. Findlay 5800*; $2n=42$ det. on one plant.

(1j) Poa fernaldiana Nannf.

One collection was hexaploid, $2n=$ca. 42.

Voucher specimen: New York State: Cyt. No. 1821, Mt. Marcy, *D. Erskine s.n., August 1, 1954*; $2n=$ca. 42 det. on one clone.

(1k) Poa glauca Vahl

Ten collections were hexaploid, $2n=42$; two had $2n=50$; 14 were octoploid, $2n=56$; four had $2n=70$; and one accession each had $2n=$ca. 64, 65, 75, and 78.

Voucher specimens: Mackenzie District: Cyt. No. 888, Yellowknife, *W. J. Cody & J. B. McCanse 3031*; $2n=42$ det. on one clone. Cyt. No. 1123, Little Buffalo River, 32 miles west of Ft. Smith, *W. J. Cody & C. C. Loan 4747*; $2n=42$ det. on one plant. Yukon: Cyt. No. 768, Whitehorse, *J. M. Gillett s.n., June, 1949*; $2n=42$ det. on one clone. Cyt. No. 977, Carcross, *J. M. Gillett 3809*; $2n=42$ det. on one plant. Cyt. No. 978, Minto, *J. M. Gillett 4022*; $2n=42$ det. on one plant. Cyt. No. 981, Tantalus Butte, Carmacks, *J. M. Gillett & D. A. Mitchell 4017*; $2n=42$ det. on one plant. Alaska: Cyt. No. 1384, Delta Junction, Mile 268, Richardson Highway, *W. J. Cody & T. J. M. Webster 5953*; $2n=42$ det. on one plant. Cyt. No. 1387, near Delta Junction, *W. J. Cody & T. J. M. Webster 6034*; $2n=42$ det. on one plant. Cyt. No. 1388, near Delta Junction, *W. J. Cody & T. J. M. Webster 6003*; $2n=42$ det. on one plant. Cyt. No. 1390, Big Delta Camp area, Mile 264, Richardson Highway, *W. J. Cody & T. J. M. Webster 6038*; $2n=42$ det. on one plant. Yukon: Cyt. No. 990, South slope of Moosehide Mountain, Dawson, *J. A. Calder & L. G. Billard 3812*; $2n=50$ det. on one plant. Alaska: Cyt. No. 1391, Big Delta Camp area, Mile 264, Richardson Highway, *W. J. Cody & T. J. M. Webster 6037*; $2n=$ca. 50 det. on one plant. Quebec: Cyt. No. 659, Fort Chimo, *J. A. Calder s.n., August, 1948*; $2n=56$ det. on one clone. Manitoba; Cyt. No. 674, Fort Churchill, *J. M. Gillett s.n., August, 1948*; $2n=56$ det. on two clones. Keewatin District: Cyt. No. 724, Southampton Island, Coral Harbor, *W. J. Cody 1923*; $2n=56$ det. on one plant. Mackenzie District: Cyt. No. 917, Yellowknife, *W. J. Cody & J. B. McCanse 3240*; $2n=56$ det. on one plant. Cyt. No. 1124, West of Ft. Smith, *W. J. Cody 4161*; $2n=56$ det. on one plant. Cyt. No. 1054, Fort Smith, *W. J. Cody & C. C. Loan 3933*; $2n=56$ det. on one clone. Cyt. No. 1875, Fort Simpson, *W. J. Cody & J. M. Matte 8785*; $2n=56$ det. on one clone. Yukon: Cyt. No. 771 and 772, Whitehorse, *J. M. Gillett s.n., June, 1949*; $2n=56$ det. on two clones. Cyt. No. 992, West slope of Moosehide Mountain, Dawson, *J. A. Calder & L. G. Billard 3738*; $2n=56$ det. on one plant. Alaska: Cyt. No. 1363, Hope, Kenai Peninsula,

J. A. Calder 5915; $2n$ = ca. 56 det. on one plant. Cyt. No. 1274 and 1392, near base of Donnelly Dome, Mile 250, Richardson Highway, *W. J. Cody 6296*; $2n = 56$ det. on two plants. Cyt. No. 1393, Big Delta Camp area, Mile 264, Richardson Highway, *W. J. Cody & T. J. M. Webster 6150*; $2n$ = ca. 56 det. on one plant. Cyt. No. 1395, Big Delta Camp area, Mile 264, Richardson Highway, *W. J. Cody & T. J. M. Webster 6157*; $2n$ = ca. 56 det. on one plant. Franklin District: Cyt. No. 574, Baffin Island, Frobisher Bay, *H. A. Senn s.n., July, 1948*; $2n = 70$ det. on one clone. Cyt. No. 599, Baffin Island, Frobisher Bay, *J. A. Calder s.n., August, 1948*; $2n = 70$ det. on one clone. Keewatin District: Cyt. No. 726, Southampton Island, Coral Harbor, South Bay, *W. J. Cody 1957*; $2n = 70$ det. on one plant. Mackenzie District: Cyt. No. 1122, Bank of Slave River, west of Ft. Smith, *W. J. Cody & C. C. Loan 4623*; $2n = 70$ det. on one plant. Cyt. No. 1050, Fort Smith, *W. J. Cody & C. C. Loan 3936*; $2n$ = ca. 64 det. on one clone. Keewatin District: Cyt. No. 727, Southampton Island, Coral Harbor, *W. J. Cody 1961*; $2n = 65$ det. on one plant. Franklin District Cyt. No. 606, Baffin Island, Frobisher Bay, *J. A. Calder s.n., August*, 1948; $2n = 75$ det. on one clone. Quebec: Cyt. No. 648, Fort Chimo, *J. A. Calder s.n., August, 1948*; $2n = 78$ det. on one clone.

Löve and Löve (1956) reported $2n = 42$, 49, 56, and 63 for Icelandic collections of *P. glauca* and listed a wide range of counts from literature reports for this species, namely $2n = 42$ to $2n = 72$.

(1l) Poa glaucantha Gaud.

One collection had $2n = 44$.

Voucher specimen: Nova Scotia: Cyt. No. 1781, Pigeon Point, Isle au Haute, *W. B. Schofield 3760*; $2n = 44$ det. on one plant.

(1m) Poa glaucifolia Scribn. & Williams

Three collections were octoploid, $2n = 56$; and one collection had $2n$ = ca. 70 and another had $2n$ = ca. 100.

Voucher specimens: Alberta: Cyt. No. 1196, 3 miles NW. of town of Bow Island, *W.G. Dore 11865*; $2n = 56$ det. on one plant. Cyt. No. 1200, Manyberries, *W. G. Dore 12056*; $2n = 56$ det. on one plant. Cyt. No. 1224, 10 miles NW. of Lethbridge, *W. G. Dore 11845*; $2n = 56$ det. on one plant. Saskatchewan: Cyt. No. 1187, Piapot, *W. G. Dore 11579*; $2n$ = ca. 70 det. on one plant. Alberta: Cyt. No. 1189, Peigan Indian Reservation, near Brocket, *W. G. Dore 11645*; $2n$ = ca. 100 det. on one plant.

Hartung (1946) reported $2n = 50$, 50 + fragment, and 56 for this species.

(1n) Poa interior Rydb.

Seven collections were tetraploid, $2n = 28$; one accession had $2n = 34$; three collections were hexaploid, $2n = 42$; and six collections were octoploid, $2n = 56$.

Voucher specimens: Saskatchewan: Cyt. No. 1244, Oxbow, on slopes of Souris River Valley, *W. G. Dore & A. J. Breitung 12584*; $2n = 28$ det. on one plant. Alberta: Cyt. No. 1237, Lethbridge, *W. G. Dore 11612*; $2n = 28$ det. on two plants. Cyt. No. 1238, 4200 ft elevation, Milk River Ridge, 40 miles south of Lethbridge, *W. G. Dore 11795*; $2n = 28$ det. on one plant. Cyt. No. 1239, escarpment above Elkwater Lake, Cypress Hills, *W. G. Dore 11921*; $2n = 28$ det. on one plant. Cyt. No. 1241, bank of Dungarvan Creek, 6 miles

north of entrance to Waterton Lakes National Park, *W. G. Dore 12143*; $2n = 28$ det. on two plants. Cyt. No. 1242, western slopes of Milk River Ridge, 12 miles east of Cardston, *W. G. Dore 12391*; $2n = 28$ det. on one plant. Cyt. No. 1245, 5 miles SW. of Twin Butte, north of Waterton Lakes National Park, *W. G. Dore s.n., August 1, 1950*; $2n = 28$ det. on one plant. Saskatchewan: Cyt. No. 1236, 5 miles east of Forget, *W. G. Dore & A. J. Breitung 11521*; $2n = 34$ det. on one plant. Quebec: Gatineau Co.: Cyt. No. 1606, Precambrian escarpment north of Breckenridge, *W. G. Dore & R. J. Moore 14454*; $2n = 42$ det. on one clone. Ontario: Leeds Co.: Cyt. No. 1898, 3.5 miles NEE. of Mallorytown, *W. G. Dore 17175*; $2n = 42$ det. on one clone. Mackenzie District: Cyt. No. 1130, west of Ft. Smith, *W. J. Cody & C. C. Loan 4186*; $2n = 42$ det. on one plant. Alberta: Cyt. No. 1131, seven miles north of Ft. Fitzgerald, *W. J. Cody & C. C. Loan 4697*; $2n = 56$ det. on one plant. Cyt. No. 1216, Cardston, *W. G. Dore 12299*; $2n = 56$ det. on one plant. Mackenzie District: Cyt. No. 1132, Ft. Smith, *W. J. Cody 4145*; $2n = 56$ det. on one plant. Cyt.No. 1133, Bell Rock, 8 miles west of Ft. Smith, *W. J. Cody & C. C. Loan 4372*; $2n = 56$ det. on one plant. Cyt. No. 1699, Norman Wells, *W. J. Cody & R. L. Gutteridge 7980*; $2n = 56$ det. on one clone. Alaska: Cyt. No. 1364, Moose Pass, Kenai Peninsula, *J. A. Calder 6381*; $2n =$ ca. 56 det. on one plant.

Hartung (1946) reported $2n = 28$ for two collections of *P. interior* from Wyoming.

(1o) Poa juncifolia Scribn.

One collection had $2n =$ ca. 60.

Voucher specimen: Alberta: Cyt. No. 1192, Milk River Ridge, 40 miles south of Lethbridge, *W. G. Dore 11787*; $2n =$ ca. 60 det. on one plant.

Hartung (1946) listed $2n = 62$, 63–64, 78, and 84 for collections of *P. juncifolia*.

(1p) Poa leptocoma Trin.

One collection was hexaploid, $2n = 42$.

Voucher specimen: Alaska: Cyt. No. 1359, about 5 miles north of Seward–Hope–Kenai road junction, Kenai Peninsula, *J. A. Calder 6812*; $2n = 42$ det. on one plant.

(1q) Poa nervosa (Hook.) Vasey

Two collections were octoploid, $2n = 56$, and one accession had $2n =$ ca. 74.

Voucher specimens: Manitoba: Cyt. No. 1225, 10 miles east of Virden, *W. G. Dore 11184*; $2n = 56$ det. on one plant. Cyt. No. 1232, 12 miles northeast of Melita, *W. G. Dore 11118*; $2n = 56$ det. on one plant. Alberta: Cyt. No. 1234, Waterton Lakes National Park, *W. G. Dore s.n., August 6, 1950*; $2n =$ ca. 74 det. on one plant.

Hartung (1946) reported $2n = 62$ to $2n = 70$ for this species.

(1r) Poa palustris L.

Numerous collections were tetraploid, $2n = 28$; one accession had $2n = 30$ and one had $2n = 32$.

Voucher specimens: Newfoundland: Cyt. No. 790, near Stephenville, *I. J. Bassett s.n., July, 1949*; $2n = 28$ det. on one clone. Cyt. No. 822, 824, 831,

840, and 857; Gander, *I. J. Bassett s.n., July, 1949*; $2n = 28$ det. on five clones. Prince Edward Island: Prince Co.: Cyt. No. 1553, Wellington, *D. Erskine 1407*; $2n = 28$ det. on one plant. Alberta: Cyt. No. 1125, 7 miles north of Ft. Fitzgerald, *W. J. Cody & C. C. Loan 4708*; $2n = 28$ det. on one plant. Mackenzie District: Cyt. No. 1074, Salt River, *W. J. Cody & C. C. Loan 4587*; $2n = 28$ det. on one clone. Cyt. No. 1087, Salt River, *W. J. Cody & C. C. Loan 4603*; $2n = 28$ det. on one clone. Cyt. No. 1869, Fort Simpson, *W. J. Cody & J. M. Matte 8790*; $2n = 28$ det. on one clone. Cyt. No. 1630, Norman Wells, *W. J. Cody & R. L. Gutteridge 7510*; $2n = 28$ det. on one clone. New York State: Clinton Co.: Cyt. No. 1596, West Chazy, 10 miles south of Canada–U.S. border, *W. G. Dore 14303*; $2n = 28$ det. on one clone. Newfoundland: Cyt. No. 828, Gander, *I. J. Bassett s.n., July, 1949*; $2n = 30$ det. on one clone. Cyt. No. 854, Gander, *I. J. Bassett s.n., July, 1949*; $2n = 32$ det. on one clone.

Hartung (1946) reported $2n = 28$ for two collections of *P. palustris* and Löve and Löve (1948) listed $2n = 28$, 29, 30, and 42.

(1s) Poa pratensis L.

Numerous collections of this species were examined cytologically. The somatic chromosome numbers had a wide range: $2n = 28$, 42, 44, 56, ca. 66, 67, 70, 74, ca. 78, ca. 82, 84, 86, 88, and ca. 124. There were more numerous specimens with $2n = 56$ and $2n = 70$.

Voucher specimens: Newfoundland: Cyt. No. 833, Gander, *I. J. Bassett s.n., July, 1949*; $2n = 28$ det. on one clone. Cyt. No. 786, near Stephenville, *I. J. Bassett s.n., June, 1949*; $2n = 42$ det. on one clone. Alaska: Cyt. No. 1382, Delta Junction, Mile 268, Richardson Highway, *W. J. Cody & T. J. M. Webster 5938*; $2n = 42$ det. on one plant. Labrador: Cyt. No. 1060, Goose Bay, *J. M. Gillett s.n., July, 1950*; $2n = 44$ det. on one clone. Cyt. No. 1062 and 1063, Goose Bay, *J. M. Gillett s.n., July, 1950*; $2n = 56$ det. on two clones. Cyt. No. 1128, Goose Bay, *J. M. Gillett & W. I. Findlay 5586*; $2n = 56$ det. on one plant. Manitoba: Cyt. No. 1816, District of Springfield: Pine Ridge, *B. Boivin, D. Löve, and D. Dunbar 10279*; $2n = 56$ det. on one clone. Alberta: Cyt. No. 1227, along the Milk River, Del Bonita District, *W. G. Dore 11808*; $2n = 56$ det. on one plant. Alaska: Cyt. No. 1360, Resurrection Creek, Hope, Kenai Peninsula, *J. A. Calder 5927*; $2n =$ ca. 56 det. on one plant. Cyt. No. 1385, Falls Creek, Mile 229, Richardson Highway, *W. J. Cody 6327*; $2n =$ ca. 56 det. on one plant. Alberta: Cyt. No. 1229, 10 miles SW. of Pincher Creek, *W. G. Dore 12470*; $2n =$ ca. 66 det. on one plant. Manitoba: Cyt. No. 565 and 572, Fort Churchill, *J. M. Gillett s.n., July, 1948*; $2n = 67$ det. on two clones. Labrador: Cyt. No. 1127, North West River, *J. M. Gillett & W. I. Findlay 5531*; $2n =$ ca. 70 det. on one plant. Manitoba: Cyt. No. 1219, North of Windygates and 15 miles SW. of Morden, *W. G. Dore 11332*; $2n = 70$ det. on one plant. Cyt. No. 1231, 5 miles north of Rapid City, *W. G. Dore 11211*; $2n = 70$ det. on one plant. Alberta: Cyt. No. 1223, near northern edge of Milk River Ridge, 4200 ft elevation, 40 miles south of Lethbridge, *W. G. Dore 11733*; $2n =$ ca. 70 det. on one plant. Mackenzie District: Cyt. No. 1129, Ft. Smith, *W. J. Cody & C. C. Loan 4354*; $2n = 70$ det. on one plant. Franklin District: Cyt. No. 604 and 608, Baffin Island, Frobisher Bay, *J. A. Calder s.n., August, 1948*; $2n = 70$ det. on two clones. Alaska: Cyt. No. 1273 and 1277,

Big Delta Camp area, Mile 264, Richardson Highway, *W. J. Cody 6261 and W. J. Cody 6265*; $2n$ = ca. 70 det. on two plants. Cyt. No. 1389, Big Delta Camp area, Mile 264, Richardson Highway, *W. J. Cody & T. J. M. Webster 6045*; $2n$ = ca. 70 det. on one plant. Newfoundland: Cyt. No. 788, near Stephenville, *I. J. Bassett s.n., June, 1949*; $2n$ = 74 det. on one clone. Cyt. No. 1407, St. Anthony, *D. B. O. Savile & J. Vaillancourt 2612*; $2n$ = ca. 74 det. on one plant. Franklin District: Cyt. No. 609, Baffin Island, Frobisher Bay, *J. A. Calder s.n., August, 1948*; $2n$ = 74 det. on one plant. Mackenzie District: Cyt. No. 1049, Fort Smith, *W. J. Cody & C. C. Loan 3935*; $2n$ = ca. 78 det. on one clone. Cyt. No. 1256, Lower Hay River, *W. H. Lewis 10*; $2n$ = ca. 78 det. on one clone. Prince Edward Island: Queens Co.: Cyt. No. 1501, Bonshaw, *D. Erskine & W. G. Dore 1119*; $2n$ = ca. 82 det. on one clone. Cyt. No. 1558, North Rustico, gulf shore, *D. Erskine 1275*; $2n$ = ca. 82 det. on one plant. Quebec: Cyt. No. 666, Fort Chimo, *J. A. Calder s.n., August, 1948*; $2n$ = 84 det. on one clone. Newfoundland: Cyt. No. 877, St. John's, *I. J. Bassett s.n., July, 1949*; $2n$ = ca. 86 det. on one clone. Alberta: Cyt. No. 1233, 5 miles SW. of Twin Butte, north of Waterton Lakes Park, *W. G. Dore s.n., August 1, 1950*; $2n$ = 86 det. on one plant. Keewatin District: Cyt. No. 680, Southampton Island, Coral Harbor, *W. J. Cody 2021*; $2n$ = 86 det. on one plant. Saskatchewan: Cyt. No. 1230, Hitchcock in SE. Sask., *W. G. Dore & A. J. Breitung 11545*; $2n$ = 88 det. on one plant. Yukon: Cyt. No. 976, Mayo, *J. M. Gillett & J. A. Calder et al. 4248*; $2n$ = 88 det. on one plant. Quebec: Cyt. No. 1024: near Hudson Bay Post, Great Whale River, *D. B. O. Savile 641*; $2n$ = ca. 124 det. on one plant.

The literature reports for *P. pratensis* show a wide range in somatic chromosome number, for example the numbers listed by Löve and Löve (1956) and Hartung (1946).

(1t) Poa saltuensis Fern. & Wieg.

Two collections were tetraploid, $2n$ = 28.

Voucher specimens: Nova Scotia: Kings Co.: Cyt. No. 1784, Cape Split, *W. B. Schofield 3305*; $2n$ = 28 det. on two plants. Quebec: Hull Co.: Cyt. No. 1576, Mackenzie King Estate, Kingsmere, 7 miles NW. of Ottawa, *W. G. Dore 12984*; $2n$ = 28 det. on one plant.

(1u) Poa secunda Presl

There was a range of somatic chromosome numbers in this species: $2n$ = 42, 56, 70, ca. 78, 80, and ca. 90.

Voucher specimens: Alberta: Cyt. No. 1188, Purple Springs, 12 miles E. of Taber, *W. G. Dore 11592*; $2n$ = 42 det. on one plant. Cyt. No. 1199, Manyberries, *W. G. Dore 12032*; $2n$ = 56 det. on one plant. Cyt. No. 1203, Rocky Mountain Foothills grassland, 7 miles south of Cardston, *W. G. Dore 12194*; $2n$ = 70 det. on one plant. Cyt. No. 1207, 10 miles SW. of Pincher Creek, *W. G. Dore 12472*; $2n$ = ca. 70 det. on one plant. Cyt. No. 1208, Medicine Hat, *W. G. Dore s.n., July 22, 1950*; $2n$ = ca. 70 det. on one plant. Cyt. No. 1184, 10 miles NW. of Lethbridge, *W. G. Dore 11849*; $2n$ = ca. 78 det. on one plant. Cyt. No. 1211, edge of Red Rock Canyon, Waterton Lakes National Park, *W. G. Dore s.n., July 28, 1950*; $2n$ = ca. 78 det. on one plant. Cyt. No. 1173,

Lethbridge, *W. G. Dore 11736*; $2n = 80$ det. on one plant. Cyt. No. 1195, 3 miles NW. of town of Bow Island, *W. G. Dore & A. J. Breitung 11856*; $2n =$ ca. 90 det. on one plant.

Hartung (1946) reported $2n =$ ca. 74 to $2n =$ ca. 87 for *P. secunda*. Stebbins and Love (1941) reported $2n = 82$, ca. 84, and 86 for this species.

(1v) Poa stenantha Trin.

One collection of this species was hexaploid, $2n = 42$.

Voucher specimen: Mackenzie District: Cyt. No. 921, Yellowknife, *W. J. Cody & J. B. McCanse 3489*; $2n = 42$ det. on one plant.

(1w) Poa trivialis L.

One collection was diploid, $2n = 14$.

Voucher specimen: Nova Scotia: Cape Breton Co.: Cyt. No. 1782, NE. Harbour, Scatari Island, *E. C. Smith et al. 8618*; $2n = 14$ det. on four plants.

Löve and Löve (1956) observed $2n = 14$ in Icelandic material of *P. trivialis* and cited numerous literature reports that listed the same chromosome number for this species.

Collections of *Puccinellia*

(2a) Puccinellia ambigua Th. Sør.

Two collections were octoploid, $2n = 56$.

Voucher specimens: Prince Edward Island: Prince Co.: Cyt. No. 1641, NW. side of Skinner's Pond, 4 miles W. of Tignish, and about 9.5 miles north of the type locality of *P. ambigua* (Alberton), *D. Erskine & A. J. Smith* 2231; $2n = 56$ det. on one clone. Cyt. No. 1500, 1 mile southwest of North Point, about 17 miles north of the type locality of *P. ambigua* (Alberton), *D. Erskine & W. G. Dore 1059*; $2n = 56$ det. on one clone.

(2b) Puccinellia americana Th. Sør.

Two collections were examined; one was hexaploid, $2n =$ ca. 42, and the other was octoploid, $2n = 56$.

Voucher specimens: Nova Scotia: Digby Co.: Cyt. No. 1841, St. Bernard, *E. C. Smith et al. 11935*; $2n =$ ca. 42 det. on two plants. Prince Edward Island: Queens Co.: Cyt. No. 1494, Bunbury near Charlottetown, *D. Erskine & W. G. Dore 1144*; $2n = 56$ det. on one clone.

(2c) Puccinellia angustata (R. Br.) Rand & Redfield

Five collections of this species were hexaploid, $2n = 42$.

Voucher specimens: Franklin District: Cyt. No. 1450, 2 miles west of Cape Belknap, northeast of Ellesmere Island, *P. F. Bruggemann 279*; $2n = 42$ det. one plant. Cyt. No. 1451, Parr Inlet, northeast of Ellesmere Island, *P. F. Bruggemann 246*; $2n = 42$ det. on one plant. Cyt. No. 1540, 1541, and 1542, Mould Bay, Prince Patrick Island, *P. F. Bruggemann 507, 529, and 477*; $2n = 42$ det. on three plants.

The hexaploid chromosome number, $2n = 42$, was reported for collections of *P. angustata* by Flovik (1940), Holmen (1952), and Jørgensen *et al.* (1958). The latter also reported $n = 21$.

(2d) Puccinellia borealis Swallen

Six authentic collections identified by J. R. Swallen were hexaploid, $2n=42$.

Voucher specimens: Saskatchewan: Cyt. No. 1430, Wauchope, Southeastern Saskatchewan, *W. G. Dore & B. Boivin 13181*; $2n=42$ det. on one plant. Cyt. No. 1432, Indian Head, *W. G. Dore & B. Boivin 13057*; $2n=42$ det. on one plant. Mackenzie District: Cyt. No. 1084, Salt Plain west of Ft. Smith, *W. J. Cody & C. C. Loan 4566*; $2n=42$ det. on one clone. Cyt. No. 1747, Norman Wells, *W. J. Cody & R. L. Gutteridge 7821*; $2n=42$ det. on one plant. Yukon: Cyt. No. 979, Selkirk, *J. M. Gillett & D. A. Mitchell 4045*; $2n=42$ det. on one plant. Cyt. No. 1154; Jensen Flats on "The Loop", southeast of Dawson, *J. A. Calder & L. G. Billard 3882B*; $2n=42$ det. on one plant.

(2e) Puccinellia bruggemannii Th. Sør. in Porsild

Chromosome counts were made on seedlings grown from seed from the type collection (*Bruggemann 470*) of this species and two plants were tetraploid, $2n=28$.

Voucher specimens: Franklin District: Cyt. No. 1539, Mould Bay, Prince Patrick Island, *P. F. Bruggemann 470*; grown from loose seed from the type collection, holotype (DAO); specimen grown from seed, greenhouse, March 18, 1953, *W. M. Bowden 1539S2*, hortotype; $2n=28$ det. on two plants.

(2f) Puccinellia cusickii Weath.

Three collections of this species were tetraploid, $2n=28$. This species was included under *P. airoides* in Chase's revision of Hitchcock's manual (1951). J. R. Swallen examined these specimens and considered that they belong to a distinct species. The morphological characteristics are distinctive and the tetraploid count also distinguishes this species from the hexaploid *P. nuttalliana* (the correct name for *P. airoides*).

Voucher specimens: Saskatchewan: Cyt. No. 1142, Piapot, *W. G. Dore 11580*; $2n=28$ det. on one plant. Cyt. No. 1433, Trossachs, 15 miles west of Weyburn, *W. G. Dore & B. Boivin 13241*; $2n=28$ det. on one plant. Alberta: Cyt. No. 1429, Foothills meadow, 7 miles south of Cardston, *W. G. Dore 12187*; $2n=28$ det. on one plant.

(2g) Puccinellia distans (L.) Parl.

Four collections were hexaploid, $2n=42$. These specimens were provisionally identified as *P. distans* by J. R. Swallen; he considered that they are not the same as the European *P. distans* and "seem very close to my *P. borealis*." It seems significant that these four collections and the six collections of *P. borealis* are all hexaploid, $2n=42$. Hubbard (1954) listed $2n=28$ and 42 for the European *P. distans*.

Voucher specimens: Manitoba: Cyt. No. 1148, Winnipeg, *W. G. Dore 11452*; $2n=42$ det. on one plant. Cyt. No. 1150, Lac du Bonnet, *W. G. Dore 12797*; $2n=42$ det. on one plant. Cyt. No. 1151, Winnipeg, *W. G. Dore 11451*; $2n=42$ det. on one plant. Saskatchewan: Cyt. No. 1152, Weyburn, *W. G. Dore 11553*; $2n=42$ det. on one plant.

(2h) Puccinellia glabra Swallen

Two authentic collections identified by J. R. Swallen were examined

cytologically. One specimen was hexaploid, $2n=42$, and the other was octoploid, $2n=56$.

Voucher specimens: Alaska: Cyt. No. 1354, Head of Resurrection Bay, Seward, Kenai Peninsula, *J. A. Calder 6528*; $2n=42$ det. on one plant. Cyt. No. 1353, Homer Spit, Kenai Peninsula, *J. A. Calder 6887*; $2n=56$ det. on one plant.

(2i) Puccinellia hauptiana (Krecz.) Kitagawa

Six collections were tetraploid, $2n=28$.

Voucher specimens: Alberta: Cyt. No. 1117, Ft. Fitzgerald, *W. J. Cody & C. C. Loan 4435*; $2n=28$ det. on one plant. Mackenzie District: Cyt. No. 1870, Fort Simpson, *W. J. Cody & J. M. Matte 8781*; $2n=28$ det. on one clone. Yukon: Cyt. No. 1155, 60 Mile Camp on 60 Mile River near Alaska border, *J. A. Calder & L. G. Billard 4371*; $2n=28$ det. on one plant. Cyt. No. 1156, McRae's Landing on the Stewart River below mouth of McQuesten River, *J. M. Gillett & D. A. Mitchell 4182*; $2n=28$ det. on one plant. Cyt. No. 1158, Mayo, *J. M. Gillett & J. A. Calder et al. 4239*; $2n=28$ det. on one plant. Alaska: Cyt. No. 1396, Shaw Creek, Mile 289, Richardson Highway, *W. J. Cody & T. J. M. Webster 5883*; $2n=28$ det. on one plant.

(2j) Puccinellia laurentiana Fern. & Weath.

Two collections were examined cytologically. One specimen was hexaploid, $2n=42$, and the other was octoploid, $2n=56$.

Voucher specimens: Prince Edward Island: Cyt. No. 1679, Charlottetown, *D. Erskine s.n., August, 1953*; $2n=42$ det. on one clone. Quebec: Bonaventure Co.; Cyt. No. 1446, Tracadigash Point, *I. Ouren & T. Ouren 222*; $2n=56$ det. on one plant.

Church (1949) listed several collections from Quebec and they were octoploid, $2n=56$.

(2k) Puccinellia ***longiglumis*** (Fern. & Weath.) Raymond, comb. nov., based on *Puccinellia paupercula* (Holm) Fern. & Weath. var. *longiglumis* Fern. & Weath., Rhodora, 18:20–21. 1916. Syn.: *Puccinellia paupercula* var. *alaskana sensu* Fern. & Weath., pro parte, Rhodora, 18:18–20. 1916. *Puccinellia pumila* (Vasey) Hitchc. var. *Fernaldii* Hultén, pro parte, Fl. Aleutian Islands, 96. 1937. *nomen invalidum* (no Latin description).

Type locality of *P. longiglumis*: Prince Edward Island: Bunbury. The species ranges from the coast of the northeastern United States to the Maritimes and Eastern Quebec.

J. R. Swallen examined the 11 specimens cited below and he wrote: "[These are] included in the "manual" [Hitchcock, 1951] under *P. pumila*. Fernald includes it under *Puccinellia paupercula* var. *longiglumis*. It does not belong to *P. paupercula*, and is distinct from the western *P. pumila*. Hultén calls it *P. pumila* var. *fernaldii*, but probably is a good species undescribed." Swallen also wrote: "The specimens which I have not named apparently belong to the species which Fernald and Weatherby described under *P. paupercula* and *P. paupercula* var. *alaskana*. Sørensen described *P. ambigua* which was one element in the complex and this is the other one."

I noted a specimen in DAO Herbarium that Marcel Raymond had labelled *Puccinellia longiglumis* and he has given me permission to publish the combination. There is a range of morphological variation in the specimens of *P. longiglumis* as shown by measurements: First glumes, (1.8)–2.1–3.7–(4.1 mm); second glumes, (2.8)–3.2–5.3–(6.5)–(7–9 mm in the type specimen); and lemmas, (3.0)–3.5–4.4–(5.4)–(6.0 mm in the type). The type specimen is an extreme variation with 7–9 mm long second glumes. All of the collections of *P. longiglumis* examined cytologically were octoploid, $2n=56$, including 1 collection from Nova Scotia and 10 collections from the type locality in Prince Edward Island.

Voucher specimens: Nova Scotia: Victoria Co.: Cyt. No. 1471, near mouth of North Aspy River, *E. C. Smith et al. 4270*; $2n=56$ det. on one plant. Prince Edward Island: Queens Co.: Cyt. No. 1488, 1489, 1490, 1491, 1492, 1493, 1495, 1496, 1497, and 1498, Bunbury near Charlottetown, *D. Erskine & W. G. Dore 1145, 1147, 1148, 1149, 1142, 1143, 1146, 1154, 1155, and 1156*, topotypes; $2n=56$ det. on 10 clones.

(2l) Puccinellia lucida Fern. & Weath.

Four collections were examined cytologically. Two specimens were hexaploid, $2n=42$, and two were octoploid, $2n=56$.

Voucher specimens: Mackenzie District: Cyt. No. 1693, Aklavik, Mackenzie River delta, *W. J. Cody & R. L. Gutteridge 7932*; $2n=42$ det. on one clone. Cyt. No. 1695, Aklavik, Mackenzie River delta, *W. J. Cody & R. L. Gutteridge 7931*; $2n=42$ det. on one clone. Quebec: Cyt. No. 1564, Cabbage Willows, James Bay, *G. M. Stirrett 828*; $2n=56$ det. on one plant. Manitoba: Cyt. No. 691, Fort Churchill, *J. M. Gillett 2505*; $2n=56$ det. on one plant.

Church (1949) listed one collection from Quebec and it was octoploid, $2n=56$.

(2m) Puccinellia nuttalliana (Schult.) Hitchc. in Jepson

Seventeen collections of this species were uniformly hexaploid, $2n=42$. In Chase's revision of Hitchcock's manual (1951), this species was listed under *P. airoides* (Nutt.) Wats. and Coult. However, the earliest specific epithet is *nuttalliana* Schult., published in 1824. The significant nomenclature is:

Puccinellia nuttalliana (Schult.) Hitchc. in Jepson, Fl. Calif. 1:162–163. 1912. Based on *Poa nuttalliana* Schult.

Poa airoides Nutt., Gen. Pl. 1:68. 1818. *non Poa airoides* Koel., 1802. *non Poa airoides* Kunth, 1833.

Poa nuttalliana Schult. Mant. 2:303. 1824. Based on *Poa airoides* Nutt.

Puccinellia airoides (Nutt.) Wats. and Coult. in A. Gray, Man. ed. 6. p. 668. 1890. Based on *Poa airoides* Nutt.

Additional later synonyms were listed in Chase's revision of Hitchcock's manual (1951).

The type specimen of this taxon was cited by Nuttall (loc. cit.) as "Hab. in depressed situations around the Mandan [North Dakota] village, on the missouri." The type specimen (PH!; photograph, DAO!) from Mandan, North Dakota, consists of a rather incomplete specimen from which some of the inflorescences have been removed. The type is mounted on a sheet with

several other collections, one of which is labelled as the type of *Glyceria montana* Nutt. ex Buckl. There are also two fragments of the type collection of *Poa airoides*: a panicle (MO!; photograph, DAO!) and a small fragment (US!).

Voucher specimens: Manitoba: Cyt. No. 1116, Gillam, *W. B. Schofield 1329*; $2n=42$ det. on one plant. Saskatchewan: Cyt. No. 1135, Carnduff, southeastern Saskatchewan, *W. G. Dore & A. J. Breitung 12606*; $2n=42$ det. on one plant. Cyt. No. 1139, Weyburn, *W. G. Dore 11552*; $2n=42$ det. on one plant. Cyt. No. 1144, Piapot, *W. G. Dore 11583*; $2n=42$ det. on one plant. Cyt. No. 1149, Chaplin, *W. G. Dore 11564*; $2n=42$ det. on one plant. Alberta: Cyt. No. 1136, 3 miles NW. of Bow Island, *W. G. Dore 11862*; $2n=42$ det. on one plant. Cyt. No. 1137, Taber, *W. G. Dore 11826*; $2n=42$ det. on one plant. Cyt. No. 1138, Medicine Hat, *W. G. Dore 11978*; $2n=42$ det. on one plant. Cyt. No. 1140, 10 miles NW. of Lethbridge, *W. G. Dore 11834*; $2n=42$ det. on one plant. Cyt. No. 1143, Cardston, *W. G. Dore & A. J. Breitung 12298*; $2n=42$ det. on one plant. Cyt. No. 1145, Peigan Indian Reserve, near Brocket, 12 miles east of Pincher Creek, *W. G. Dore 11648*; $2n=42$ det. on one plant. Cyt. No. 1146, shoreline of Elkwater Lake, Cypress Hills, *W. G. Dore 11878*; $2n=42$ det. on one plant. Cyt. No. 1147, Manyberries, *W. G. Dore 12062*; $2n=42$ det. on one plant. Mackenzie District: Cyt. No. 1618, Norman Wells, *W. J. Cody & R. L. Gutteridge 7500*; $2n=42$ det. on one clone. Cyt. No. 1691 and 1743, Aklavik, Mackenzie River delta, *W. J. Cody & R. L. Gutteridge 7930*; $2n=42$ det. on one clone and one plant. Yukon: Cyt. No. 770, Whitehorse, *J. M. Gillett s.n., June, 1949*; $2n=42$ det. on one clone. Cyt. No. 1157, Alaska Highway near Porter Creek, 3 miles north of Whitehorse, *J. M. Gillett 4596*; $2n=42$ det. on one plant.

(2n) Puccinellia × *phryganodes* (Trin.) Scribn. & Merr. (pro sp.)

Three collections were triploid, $2n=21$.

Voucher specimens: Franklin District: Cyt. No. 577, Baffin Island, Frobisher Bay, *H. A. Senn s.n., July, 1948*; $2n=21$ det. on one clone. Cyt. No. 612, Baffin Island, Frobisher Bay, *J. A. Calder s.n., August, 1948*; $2n=21$ det. on one clone. Keewatin District: Cyt. No. 1526, Southampton Island, Coral Harbour, *D. K. Brown s.n., September, 1952*; $2n=21$ det. on one clone.

Sørensen (1953) stated that plants of *P.* × *phryganodes* do not set seed and the anthers do not dehisce nor form pollen. They spread by vegetative reproduction; see also Jørgensen *et al.* (1958). The three specimens cited above have flowering culms. It seems to me that *P.* × *phryganodes* is an interspecific triploid hybrid that has arisen by hybridization between a diploid and a tetraploid species. When more information is available, it might be possible to determine the parentage of this putative hybrid.

The triploid chromosome number, $2n=21$, has been reported for Greenland collections of this taxon by Sørensen (1953) and by Jørgensen *et al.* (1958).

(2o) Puccinellia vaginata (Lange) Fern. & Weath.

One collection was octoploid, $2n=56$.

Voucher specimen: Keewatin District: Cyt. No. 714, Southampton Island, Coral Harbor, South Bay, *W. J. Cody 1523*; $2n=56$ det. on one plant.

Jørgensen *et al.* (1958) reported $2n=56$ for three plants from Greenland.

(2p) Puccinellia vahliana (Liebm.) Scribn. & Merr.

Two collections were diploid, $2n = 14$.

Voucher specimens: Keewatin District: Cyt. No. 716, Southampton Island, Coral Harbor, *W. J. Cody 2010*; $2n = 14$ det. on two plants. Cyt. No. 730, Southampton Island, Coral Harbor, *W. J. Cody 1975*; $2n = 14$ det. on one plant.

Sørensen (1953), Holmen (1952), and Jørgensen *et al.* (1958) listed this taxon as *Colpodium vahlianum* (Liebm.) Nevski. The diploid chromosome number, $2n = 14$, was reported for this species by Flovik (1940) and Holmen (1952); and Jørgensen *et al.* (1958) reported $n = 7$.

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